providing a time domain substantially orthogonalizing procedure to divide said channel into output bins;

providing one or more spatial directions for communication defined by corresponding weightings among said channel outputs wherein each output bin has at least one associated spatial direction, said weightings defining said one or more spatial directions so that each spatial direction corresponds to communication via more than one channel output; and

E1 cont'd

receiving information via subchannels of said channel by employing at least two independent parallel applications of said time domain substantially orthogonalizing procedure, each subchannel defined by a combination of output bin and spatial direction.

270. (AMENDED) The method of claim 266 wherein receiving information comprises:

Sub G1

receiving input time domain symbols via said channel outputs;

applying said substantially orthogonalizing procedure to said input time domain symbols independently for each of said channel outputs; and

E2

applying ones of said weightings corresponding to each of said output bins to results of said substantially orthogonalizing procedure to obtain symbols transmitted via each of said ~~subchannels.~~

3

~~271.~~ (AMENDED) The method of claim 1 ~~266~~ wherein receiving information comprises receiving information in subchannels defined by said output bins and at least two spatial directions associated with each of said output bins, said spatial directions being chosen independently for each of said output bins.

272. The method of claim 271 wherein said at least two spatial directions are mutually orthogonal for each of said output bins.

Subr17 273. The method of claim 271 wherein receiving comprises:

receiving time domain symbols via said channel outputs;

for each of said channel outputs, independently applying said time domain substantially orthogonalizing procedure to said received input time domain symbols; and

applying said weightings to results of said time domain substantially orthogonalizing procedure to obtain symbols transmitted via each of said subchannels.

274. The method of claim 273 wherein said weightings are selected according to singular value decompositions of matrices characterizing communication via each output bin of said channel.

275. The method of claim 273 further comprising applying a decoding procedure to said symbols transmitted via each of said subchannels.

276. The method of claim 271 wherein said at least two spatial directions are not mutually orthogonal for each of said output bins.

Subr27 277. The method of claim 276 wherein receiving comprises:

receiving time domain symbols via said channel outputs;

for each of said channel outputs, applying said weightings to said time domain symbols to obtain results corresponding to each of said spatial directions;

applying said time domain substantially orthogonalizing procedure to said results independently for each of said spatial directions to obtain symbols transmitted via each of said subchannels; and

decoding said symbols transmitted via each of said subchannels according to a coding scheme optimized to take advantage of multiple spatial directions.

278. The method of claim 266 wherein said time domain substantially orthogonalizing procedure belongs to one of a group consisting of a Fast Fourier Transform and an inverse Fast Fourier Transform.

279. The method of claim 278 wherein said Fast Fourier Transform or said inverse Fast Fourier Transform is preceded by removal of a cyclic prefix.

280. The method of claim 266 wherein said channel comprises a wireless channel and said plurality of channel outputs are associated with a corresponding plurality of receiver antenna elements.

281. The method of claim 280 wherein said plurality of receiver antenna elements are co-located.

282. The method of claim 280 wherein said plurality of receiver antenna elements are at disparate locations.

283. The method of claim 266 further comprising:

receiving via a particular one of said channel outputs, at least ν frequency domain training symbols transmitted via a particular input to said channel in a single burst, ν being an extent in symbol periods of a duration of significant terms of an impulse response of a channel component coupling said particular channel input and said particular channel output;

applying said time domain substantially orthogonalizing procedure to said received at least ν training symbols to obtain a time domain response for said channel component; and

applying an inverse of said substantially orthogonalizing procedure to a zero-padded version of said time domain response to obtain a frequency response for said channel component.

SubG12

284. (AMENDED) A receiver system for receiving via a plurality of outputs from a channel, said receiver system comprising:

E3

at least one processing element that applies a time domain substantially orthogonalizing procedure to divide said channel into output bins;

a spatial processor employing weightings among said channel outputs to define spatial directions wherein each output bin has at least one associated spatial direction, said weightings defining said one or more spatial directions so that each spatial direction corresponds to communication via more than one channel output; and

wherein said receiver system receives information via subchannels of said channel, by employing at least two independent parallel applications of said substantially orthogonalizing procedure by said at least one processing element, each of said subchannels being defined by a ~~combination of output bin and spatial direction.~~

SubF47

288. The receiver system of claim 284 further comprising:

a system input that receives input time domain symbols via said channel outputs; and wherein

said at least one processing element applies said substantially orthogonalizing procedure to said time domain input symbols independently for each of said channel outputs; and wherein

said spatial processor applies ones of said weightings corresponding to each of said output bins to results of said substantially orthogonalizing procedure to obtain symbols transmitted via each of said subchannels.

289. The receiver system of claim 284 wherein said receiver system receives information in subchannels defined by said output bins and at least two spatial directions associated with each of said output bins, each of said output bins having identical associated spatial directions.

290. The receiver system of claim 284 wherein said receiver system receives information in subchannels defined by said output bins and at least two spatial directions associated with each of said output bins, said spatial directions being chosen independently for each of said output bins.

291. The receiver system of claim 290 wherein said at least two spatial directions are mutually orthogonal for each of said output bins.

Sub F5

292. The receiver system of claim 290 further comprising:

a system input that receives time domain symbols via said channel outputs; and wherein

said at least one processing element, for each of said channel outputs, independently applies said time domain substantially orthogonalizing procedure to said received input time domain symbols; and wherein

said spatial processor applies said weightings to results of said time domain substantially orthogonalizing procedure to obtain symbols transmitted via each of said subchannels.

293. The receiver system of claim 292 wherein said weightings are selected according to singular value decompositions of matrices characterizing communication via each output bin of said channel.

294. The receiver system of claim 292 further comprising a decoding system that applies a decoding procedure to said symbols transmitted via each of said subchannels.

295. The receiver system of claim 290 wherein said at least two spatial directions are not mutually orthogonal for each of said output bins.

296. The receiver system of claim 295 further comprising:

a system input that receives time domain symbols via said channel outputs; and wherein

said spatial processor, for each of said channel outputs, applies said weightings to said time domain symbols to obtain result symbols corresponding to each of said spatial directions; and wherein

said at least one processing element applies said time domain substantially orthogonalizing procedure to said result symbols independently for each of said spatial directions to obtain symbols transmitted via each of said subchannels; and wherein said receiver system further comprises:

a decoding system that decodes symbols transmitted via each of said subchannels according to a coding scheme optimized to take advantage of multiple spatial directions.

297. The receiver system of claim 284 wherein said time domain substantially orthogonalizing procedure belongs to one of a group consisting of a Fast Fourier Transform and an inverse Fast Fourier Transform.

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298. The receiver system of claim 297 wherein said Fast Fourier Transform or said inverse Fast Fourier Transform is preceded by removal of a cyclic prefix.

299. The receiver system of claim 284 wherein said channel comprises a wireless channel and said plurality of channel outputs are associated with a corresponding plurality of receiver antenna elements.

300. The receiver system of claim 299 wherein said plurality of receiver antenna elements are co-located.

301. The receiver system of claim 299 wherein said plurality of receiver antenna elements are at disparate locations.

Sub F6 / 14

302. The receiver system of claim 284 further comprising:

a channel estimation processor that receives via a particular one of said channel outputs, at least ν frequency domain training symbols transmitted via a particular input to said channel, ν being an extent in symbol periods of a duration of significant terms of an impulse response of channel component coupling said particular channel input and said particular channel, applies said time domain substantially orthogonalizing procedure to said received at least ν training symbols to obtain a time domain response for said channel component, and that applies an inverse of said substantially orthogonalizing procedure to a zero-padded version of said time domain response to obtain a frequency response for said channel component.